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## MARKET MICROSTRUCTURE AND INTERMEDIATION

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Classical economics poses three questions: what shall be produced, how shall it be produced, and for whom. Stiglitz (1994, pp. 5-6) observes that in addition to these three questions, one should add a fourth: "How should these decisions be made, and who should make them?" In a market economy, the practical answer to this question is that firms decide what, how and for whom. Many markets are guided by the "visible hand" of firms, as observed by Alfred D. Chandler (1977), while in others, firms are guided by the "invisible hand" of the market, as emphasized by Adam Smith. Firms establish and operate most markets by setting prices, carrying out transactions, forming and monitoring contracts, and producing and distributing information.

## Market Microstructure and Intermediation

Daniel F. Spulber

**C**lassical economics poses three questions: what shall be produced, how shall it be produced, and for whom. Stiglitz (1994, pp. 5–6) observes that in addition to these three questions, one should add a fourth: “How should these decisions be made, and who should make them?” In a market economy, the practical answer to this question is that *firms* decide what, how, and for whom. Many markets are guided by the “visible hand” of firms, as observed by Alfred D. Chandler (1977), while in others, firms are guided by the “invisible hand” of the market, as emphasized by Adam Smith. Firms establish and operate most markets by setting prices, carrying out transactions, forming and monitoring contracts, and producing and distributing information.

Firms create and manage markets by acting as intermediaries between buyers and sellers. An *intermediary* is an economic agent that purchases from suppliers for resale to buyers or that helps buyers and sellers meet and transact. Intermediaries seek out suppliers, find and encourage buyers, select buy and sell prices, define the terms of transactions, manage the payments and record keeping for transactions, and hold inventories to provide liquidity or availability of goods and services. In finance, the study of intermediation and the institutions of exchange is called *market microstructure*. I apply the term market microstructure to markets in general. Rather than focusing on aggregation of buyer and seller decisions about prices and quantities, I emphasize transactions and the activities of firms that structure these decisions.

When acting as intermediaries, firms answer the three classical questions by

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making decisions about the mix of products they will purchase from suppliers, the types of suppliers that they will contract with, and the allocation of goods and services to be offered to their customers. The distinction between merchants and manufacturers need not be clear cut. In combination with managing transactions, intermediaries often transform products to add value: transporting, storing, repackaging, assembling, preparing for final use, and adding information and guaranties. Conversely, manufacturers carry out many market-making activities, intermediating between sellers of raw materials or product components, and buyers of manufactured goods.

Many economists will recognize this analysis as having roots in the work of Ronald Coase (1937) and Oliver Williamson (1975), who have identified the importance of transaction costs in shaping the organization of firms. Yet, the insight that transactions are costly yields additional implications about the organization of market institutions. Just as producing goods and services consumes resources, so does the establishment and operation of markets to allocate those goods and services.

Companies incur costs in adjusting prices and communicating price information to buyers and sellers. The types of information imperfections that are present determine the intermediation activities of firms. When demand and supply have an element of randomness, intermediaries provide liquidity or "immediacy" by standing ready to buy and sell. Given uncertainty about the willingness to pay or opportunity costs of trading partners, intermediaries coordinate transactions by match-making and brokering activities. When the characteristics of buyers or sellers are unobservable, intermediaries generate market information and provide guaranties for product quality. When the actions of buyers or sellers are costly to observe, intermediaries provide monitoring and contracting services.

The main function of market intermediaries is to figure out ways of clearing the market, that is, pricing to match purchases to sales. This crucial price-setting activity provides an explanation for a main puzzle of neoclassical economics: how are the market equilibrium prices attained? The market institutions that provide intermediation have not been given the attention they deserve.

The purpose of this paper is to emphasize the important economic role played by firms as intermediaries. I begin by highlighting the importance of intermediary firms; it seems likely that intermediation comprises over a quarter of the U.S. economy! Then, drawing on models of market microstructure and financial intermediation, I focus attention on four of the most important actions of economic intermediaries: setting prices and clearing markets; providing liquidity and immediacy; coordinating buyers and sellers; and guaranteeing quality and monitoring performance. I also consider the significant implications of economic and financial models of intermediation for microeconomic analysis.

## **Intermediation in the U.S. Economy**

In thinking about the role of intermediaries in an economy, it is analytically useful to recognize three types of agents: consumers, market-taking firms and

market-making firms. Market-taking firms take price signals and market institutions as givens. In contrast, market-making firms are intermediaries that create and operate markets. Market makers include not only price-making firms but also other market institutions such as organized exchanges for securities, options, futures and other financial assets. They coordinate transactions between consumers, between market-taking firms, between consumers and market-taking firms, and between other intermediaries. Consumers send expenditures to intermediaries in return for goods demanded, and receive incomes from intermediaries in return for inputs supplied. Similarly, market-taking firms receive revenues from intermediaries in return for goods supplied and make factor payments to intermediaries in return for goods received. Thus, the presence of intermediaries in the economy modifies the familiar "circular flow" of economic activity.

These intermediaries, or market-making firms, make a significant contribution in the U.S. economy. The exact amount is difficult to assess, since it requires estimating the contribution of market-making activities to value added in sectors like manufacturing, agriculture, mining, construction, transportation, or public utilities. But as a rough estimate of shares of gross domestic product, one might begin with the idea that intermediation includes retail trade (9.3 percent of GDP), wholesale trade (6.5 percent), finance and insurance (7.3 percent), and some business services and other services (1.9 percent). On this conservative estimate, assuming that market-making activities in all other sectors are zero, intermediation activities would still account for about one-quarter of gross domestic product.<sup>1</sup> Table 1 offers some broad measures of these intermediation-oriented industries. It may also be useful to specify more closely what these two million firms do, and what intermediation activities they carry out.

Retailers include supermarkets, discount stores, department stores, general merchandise stores, specialty apparel stores, warehouse clubs, drug stores, convenience stores and variety stores. Some sell durable goods, some sell nondurables, and some sell both. The retail sector performs a wide variety of intermediation functions including pricing, marketing, inventory holding, selection of suppliers, setting bid prices offered to suppliers, quality certification and management of transactions. Retailers have enhanced their market-making activities through Electronic Data Interchange (EDI) with their suppliers, which lowers costs and increases speed in exchanging data on sales, inventory and marketing as well as expediting billing and invoicing. Retailers are generating improved data through bar coding of merchandise, point-of-sale scanners, and computerized inventory tracking and reordering. This increases information about sales and allows a rapid response to changing market conditions.

Wholesalers act as intermediaries for transactions between businesses. Like retailers, they distribute goods, manage inventories, communicate price and product information, certify quality and provide credit. Wholesalers market to retailers,

<sup>1</sup> An industry's general product by origin (GPO) or value added equals its gross output (sales or receipts and other operating income plus inventory change) minus its intermediate inputs (consumption of goods and services purchased from other industries or imported); see Yuskavage (1994).

**Table 1**  
**Intermediation in the U.S. Economy**

|                                 | Value Added to GDP <sup>a</sup><br>(1993 current dollars, billions <sup>c</sup> ) | Share of GDP | Number of Firms <sup>b</sup> |
|---------------------------------|---|--------------|------------------------------|
| Retail Trade                    | \$592.4   | 9.33%        | 1,066,358                    |
| Wholesale Trade                 | \$413.1   | 6.51%        | 386,609                      |
| Finance, Insurance <sup>c</sup> | \$462.1   | 7.28%        | 404,243                      |
| Selected Services               | \$220   | 1.89%        | 142,095                      |
| Total                           | \$1,687.6   | 25.01%       | 1,999,305                    |

<sup>a</sup>Source: Survey of Current Business, April 1995, Table 1, p. 47.

<sup>b</sup>Source: 1992 Census (Retail Trade; Wholesale Trade; Finance, Insurance and Real Estate Industries, Services). Number of firms for finance, insurance includes real estate agents and developers.

<sup>c</sup>Excludes nonfarm housing service and other real estate.

search for suppliers and handle interbusiness transactions. In addition, as noted by the U.S. Department of Commerce's (1994) *U.S. Industrial Outlook 1994*, they increasingly provide "value-added services" such as packaging, labeling, bar coding, electronic data interchange, product lot tracking, inventory controls and faster delivery.

About 90 percent of firms in the wholesale sector, holding 60 percent of the market, are merchant wholesalers (U.S. Department of Commerce, 1994, p. 38.1).<sup>2</sup> Their business is split about 50-50 between durable and nondurable goods. The other 40 percent of the wholesale sector is split between a number of other intermediation arrangements. The most important of these alternative distribution arrangements includes direct manufacturer-retailer transactions (retail chain stores, warehouse clubs, discount stores and home center stores), mail order, catalog sales, manufacturer-industrial user transactions and retail sales to industrial users (U.S. Department of Commerce, 1994, p. 38.2).<sup>3</sup> Wholesalers also include manufacturers' sales branches, agents, brokers and commission merchants.

Financial intermediaries perform a wide array of services including pricing of some financial assets, providing liquidity, allocating risk, allocating financial assets

<sup>2</sup> While many people can name retailers, the largest wholesalers are less well known. The 10 largest wholesalers in 1994 were Supervalu, Fleming, McKesson, Sysco, Alco Standard, Bergen Brunswig, Cardinal Health, Foxmeyer Health, Merisel and Genuine Parts (*Fortune*, May 15, 1995).

<sup>3</sup> Measuring the wholesale trade industry can be difficult. As noted by *U.S. Industrial Outlook 1994* (U.S. Department of Commerce, 1994, p. 38.2), retail sales to industry are no longer included in the Census Bureau's sales totals for wholesale establishments. However, manufacturers' sales branches, agents, brokers and commission merchants continue to be included in the GDP figures. It quotes an industry survey for 1992 in which total wholesale was divided as follows: 45 percent through merchant wholesalers, 7 percent through agents, brokers and commission merchants, 26 percent through alternative channels, and manufacturers' sales branches distributed 23 percent. Clearly, some of the wholesalers' traditional activities are being carried out by retailers and are reflected in value added of the retail trade. Also, some of the strategic alliances between retailers and manufacturers appear to reflect increased wholesaling responsibilities for manufacturers, which show as a contribution to manufacturing value added.

over time, combining assets to reduce the transaction costs of diversification, supplying information and managing transactions. Depository institutions intermediate between borrowers and lenders, setting rates of interest for loans and deposits, screening borrowers for creditworthiness and monitoring their repayment performance. Securities and commodity brokers provide a range of intermediation services managing complex financial transactions, carrying out trades on the organized exchanges and supplying investors with information. Insurance companies manage transactions, allocate risk and intermediate between investors and buyers of insurance contracts.

Finally, many business services can be classified as intermediation, including advertising, credit agencies, direct mail advertising services, personnel supply services and computer rental and leasing.<sup>4</sup> The gross sales in these particular areas amount to about half of business services. This is the basis for the earlier estimate that intermediation activities contribute about half of the value added of business services, or approximately 1.9 percent of GDP.

Some activities in the retail and wholesale sector may be closer to production than to intermediation. Conversely, intermediation activities are present that can be difficult to discern in aggregate data on the manufacturing, agriculture, mining, construction, transportation or public utilities sectors. Manufacturers do expend a substantial effort on marketing and sales, purchasing, personnel recruitment, financing and technology procurement, and surely such activities account for some share of the value added by the manufacturing sector. However, the aggregate manufacturing data are focused on units of output, employees, total costs, inventories, and receipts, and do not separate out the value added by the retail, wholesale, marketing, and sales activities carried out internally by manufacturers. Many of the companies in manufacturing, mining, construction, transportation and public utilities sectors are vertically integrated. These companies carry out many intermediation functions that are difficult to identify from company data, including pricing, marketing, inventory management and ordering from suppliers. This shortcoming in the manufacturing data reflects the traditional economics perspective that the firm is a manufacturer and that market allocation decisions are handled by an exogenous price system.

In addition, manufacturers have significant finance and personnel requirements. They devote effort to raising capital on financial markets, communicating with investors and issuing debt and equity. Manufacturers also invest in hiring personnel, learning about the labor market and managing the employment relationship. Such labor market activities are explicitly recognized contributions to GDP as part of business services when they are outsourced to temporary help firms.

<sup>4</sup> Such services made up \$1.264 trillion in value added, or 20 percent of GDP, in 1993. It is difficult to determine the extent to which services represent intermediation activities. For example, due to data limitations, I choose to exclude accounting services even though some of these services are directed to information gathering by firms for provision of information to the financial markets. Also, I exclude legal services even though there are some legal aspects to intermediation, particularly in forming contracts with customers and suppliers.

Similar considerations apply to companies in the mining, construction, transportation and public utilities sector. For example, Exxon, which is the largest industrial corporation with \$97 billion in sales, not only carries out mining and refining, but makes a complex set of decisions about purchases, supplies, inventories and pricing. In construction, a company such as Fluor (almost \$9 billion in sales) acts as a general contractor, coordinating a segment of the market for a variety of construction services. Large transportation companies, such as the United Parcel Service (\$17.7 billion in sales), manage a vast transportation market intermediating between customers mailing packages and transportation suppliers. The trucking company J.B. Hunt Transport (\$1 billion in sales) performs intermediation services by coordinating transfers of shipments with rail and shipping companies. Large utilities, such as Commonwealth Edison, operate large-scale wholesale and retail power markets, contracting with suppliers of fuel and residential, commercial and industrial customers.

Thus, companies combine manufacturing with merchant activities, operating markets for goods and services and factors of production. Carrying out such transactions is costly, and these costs would not be incurred in the absence of corresponding benefits. Using the aggregate data, along with case-by-case examples such as those given here, it is possible to gather a rather rough idea of the contribution of intermediation activities to value added in these other sectors.

One indicator of market-related activities is that one-third of the nation's 18 million manufacturing employees are not classified as production workers. These include sales, delivery, advertising, credit, installation and servicing, clerical, executive, purchasing, financing, legal, personnel, factory supervisors (above line-supervisor level) and professional and technical employees.<sup>5</sup> Some of these nonproduction employees are engaged in intermediation activities like sales, purchasing and advertising; others are not. It is not evident how to relate this information to value added by manufacturing, although it is known that the total manufacturing payroll (of \$529 billion) is split almost evenly between nonproduction employees (\$263 billion) and the wages of production workers (\$266 billion).

A second clue is that the proportion of nonproduction employees varies considerably across and within industry groups. While the overall number of nonproduction workers in food and kindred products is 27 percent, it is very high in those categories of food that have considerable marketing activities. For example, the proportion of employees in nonproduction activities is 62 percent in bottled and canned soft drinks, 43 percent in flavoring extracts and syrups, 35 percent in wet corn milling, and 32 percent in potato chips and similar snacks. Printing and publishing has 47 percent of its employees in nonproduction, reflecting marketing, management and editorial activities. Primary product industries that might be expected to engage in relatively less marketing and purchasing have a lower share of

<sup>5</sup>The Census Bureau does not collect data on the relative numbers of these nonproduction employees. This also includes employees engaged in on-site construction. See U.S. Bureau of the Census (1991), *Annual Survey of Manufactures, Statistics for Industry Groups and Industries*.



employees not in production: for example, only 16 percent of employees in lumber and wood products are not production workers.

Overall, manufacturing, mining, construction, transportation and public utilities contribute about 31.5 percent of GDP. I believe that a conservative estimate of intermediation activities in these sectors would be a tenth of their value added. Adding this figure to the explicit intermediation activities already described implies that intermediation contributes about 28 percent of GDP.

The preceding discussion emphasizes the significance and diversity of intermediation in the U.S. economy. These market-based functions are fundamentally different from the production-based model of the neoclassical firm, but they can be addressed using models from finance and industrial organization. To examine the implications of intermediation for economic analysis it is useful to group these activities into four broad categories that cover pricing, inventory holding, coordinating transactions and monitoring performance.

### Price Setting and Market Clearing

How do prices adjust to clear markets? In the perfectly competitive market model, of course, firms simply react to prices. But in practice, many companies have at least some power over prices, due to a variety of factors such as product differentiation, transportation costs, consumer switching costs, transaction costs, barriers to entry and incomplete information about prices.

However, setting prices can be costly. Companies need to gather demand or supply information and monitor competitors' prices. They need to perform computations to determine the profit-maximizing prices. They need to communicate prices to their customers and suppliers. In many industries, companies may incur "menu costs" in changing prices by printing new catalogs or issuing price lists. Price rigidities are observed in a wide range of industries (Carlton, 1986; Cecchetti, 1986), which also suggests that changing prices is costly (Barro, 1972).<sup>6</sup>

When companies act as intermediaries, they not only arbitrage between buyers and sellers, but they also coordinate their transactions through price signals. The traditional supply and demand model can be applied to understanding the market clearing actions of intermediaries.

Consider a retail or wholesale intermediary that has market power in both its customer and supplier markets. For example, the firm may be the primary purchaser and reseller of a differentiated product. Thus, the intermediary has some power to set both bid and ask prices for its product and make profits from the markup between the two.

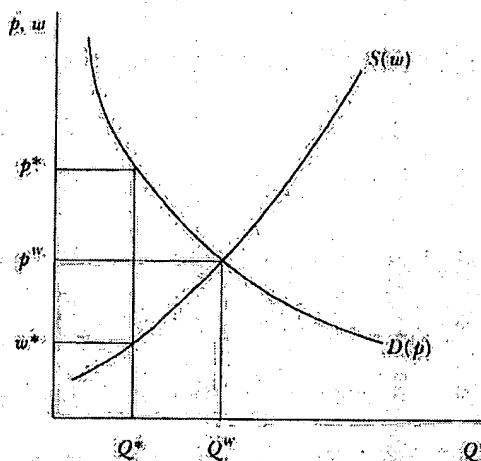
Figure 1 illustrates the situation of an intermediary with this kind of market power. The demand curve represents the residual demand of the firm's customers.

<sup>6</sup> Stahl (1988) examines competitive "market making" by price-setting firms as the Nash equilibrium of a two-stage game.



Figure 1

## The Bid-Ask Spread and the Supply and Demand Model



The supply curve represents the residual amount that the company's suppliers are willing to provide at various factor prices. The firm chooses its profit-maximizing buy and sell prices given its best estimate of these supply and demand functions. There is a bid price  $w$  that is offered to sellers and an ask price  $p$  that is proposed to buyers. The sellers' supply function is  $S(w)$  and the buyers' demand is  $D(p)$ .

The profit-maximizing firm sets prices to equate its marginal revenue to its marginal factor cost. The profit-maximizing bid and ask prices are  $w^*$  and  $p^*$ , and  $Q^*$  is the amount traded. The intermediary's profit is the rectangle in Figure 1 whose area equals  $(p^* - w^*)Q^*$ . In equilibrium, the firm chooses the buy and sell prices to clear the market,  $Q^* = D(p^*) = S(w^*)$ . The sell and buy prices straddle the Walrasian price  $p^w$ , and output is below the Walrasian output  $Q^w$ . The bid-ask spread depends on the elasticity of supply and demand, the company's transaction costs and the alternatives available to buyers and sellers.

How do firms adjust prices to clear markets? In markets where there are intermediaries with market power, the simple framework depicted in Figure 1 provides an answer. The firm will adjust both its buy and sell prices in response to changes in supply or demand. Suppose for example that the firm observes a rise in demand that shifts the demand curve to the right. The firm generally increases the sell price to ration demand and increases the buy price to encourage supply. Thus, the intermediary adjusts prices so that the market clears at a higher output.

### Providing Liquidity and Immediacy

In addition to price setting, intermediaries hold inventories of goods on hand and stand ready to sell to customers, and hold cash on hand and stand ready to

buy from suppliers. This avoids the problem of the double coincidence of wants, in which a buyer and a seller need to want to transact with each other at the same time. This function is familiar in securities markets, where financial intermediaries provide liquidity by standing ready to buy and sell stocks. In retail and wholesale markets, intermediaries provide similar immediacy services by standing ready to buy and sell commodities. The cost of carrying inventories serves to create a bid-ask spread. The dynamic path of prices responds to the intermediary's inventory level and associated risks.

The inventories of firms help to clear markets, smooth the patterns of demand and supply fluctuations and reduce the risks of exchange. Quantity rationing of buyers and sellers is complementary to the firm's price-setting activities.<sup>7</sup> As market makers, firms allocate goods and services across buyers and adjust purchases from suppliers to reduce the costs of carrying inventories while providing availability to customers.

#### Liquidity in Financial Markets

In securities markets, intermediaries like stock specialists smooth the pattern of exchange, creating market liquidity by holding inventories.<sup>8</sup> Demsetz (1968, pp. 35-36) investigates the effects of trading volume on transaction costs at the New York Stock Exchange (NYSE) and observes that "the ask-bid spread is the markup that is paid for predictable immediacy of exchange in organized markets; in other markets it is the inventory markup of retailer and wholesaler." Specialists on the NYSE are compensated for managing orders and assuming risk by standing ready to carry out trades on their own account.

The basic model in Figure 1 can be used to study a dealership market for securities. In a model due to Garman (1976), buy and sell orders arrive randomly.<sup>9</sup> The rates at which orders arrive can be interpreted as stationary demand and supply functions that depend on the ask and bid prices. The firm with market power maximizes expected profit per unit of time, subject to the restriction that the stock inventory does not drift upward or downward, which means that the market clears at each date.

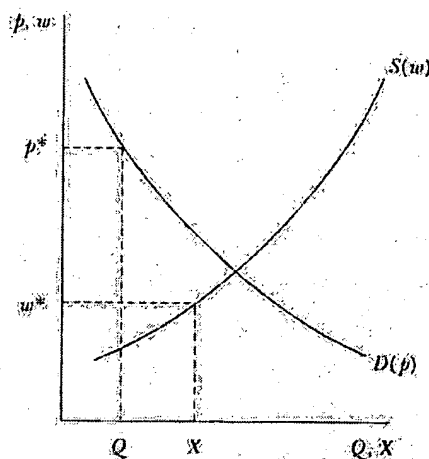
Since profits and inventories of the stock follow random walks, the intermediary with finite inventories will almost certainly go bankrupt at some point.

<sup>7</sup> Carlton (1991) observes that, with random demand, there are costs to using the price system, since a price that is too high will reduce sales and result in excess inventories, while a price that is too low will require rationing customers and foregoing sales. He suggests that many firms use nonprice rationing methods and that "firms and organized markets are competitors in production 'allocations'" (p. 257). Carlton notes that rationing the firm's customers essentially allocates products across those customers. He concludes that "one reason for a firm's existence is to facilitate trade among its customers" (p. 258).

<sup>8</sup> Baumol (1965) examines market makers and stability in the stock market. Stoll (1985) surveys alternative views of financial market making, examining the market maker as auctioneer, price stabilizer, information processor and supplier of immediacy. He observes that only the latter two roles are based on maximizing behavior by the market maker.

<sup>9</sup> On the determinants of the bid-ask spread, the interested reader might begin with West and Tinic (1971), Tinic (1972), Benston and Hagerman (1974), Logue (1975), Stoll (1978a,b), Ho and Stoll (1980, 1981) and Cohen, Maier, Schwartz and Whitcomb (1981).

Figure 2  
Inventory Holding by a Market Intermediary



However, Garman (1976) avoids this issue by considering the case where the intermediary has infinite inventories of both cash and stock. Ho and Stoll (1980, 1981) and Stoll (1978b) extend Garman's work by modeling the price setting of a risk-averse securities dealer facing stochastic demand and supply. In Ho and Stoll (1981), for example, the eventual bid-ask spread reflects the elasticity of demand and supply and the dealer's degree of risk aversion. In addition, the bid-ask spread tends to increase the longer is the dealer's planning horizon. Adding more periods provides the dealer with more opportunities for price adjustment, but increases the dealer's risk, thus requiring greater compensation and widening the bid-ask spread.

Intermediaries provide immediacy by holding inventories and cash. Price-setting intermediaries will adjust prices to maintain inventories. For example, the intermediary might choose to reduce inventories either by increasing the ask price above the level shown in Figure 1, thus reducing consumer demand, or by raising the bid price shown in the figure, thus bringing forth additional supplies. In this way, the bid and ask prices will vary depending on inventory levels observed after demand and supply are realized. Figure 2 shows the price spread with purchases  $X$  exceeding sales  $Q$ . Amihud and Mendelson (1980) consider a specialist who adjusts prices based on inventory levels to maximize average profit per unit of time.

In financial markets, the market maker must deal with informed and uninformed traders. The informed traders may have better information than the intermediary about the value of the asset. Thus, the informed traders may know that the value of the asset is above the ask price or below the bid price. In this case, trading with informed traders results in losses for the intermediary. Uninformed traders trade for liquidity and purchase at the ask price or sell at the bid price, depending upon their estimates of the asset value of liquidity requirements. The intermediary sets bid and ask prices to recover losses from trades with informed agents through

trades with uninformed agents (Copeland and Galai, 1983; Glosten and Milgrom, 1985).

### **Immediacy in Product Markets**

Firms in product markets provide analogous market-making services. Clower and Leijonhufvud (1975) observe that intermediaries provide "availability" of products. They note that since consumers and firms face fixed transaction costs, they produce or sell at discrete time intervals, which can create problems of the double coincidence of timing. Intermediaries hold inventories to provide immediacy or availability to buyers and sellers. This happens both when retailers and wholesalers purchase goods from suppliers and hold the inventories needed to serve buyers, and when manufacturers keep inventories of parts on hand and create product inventories. Just-in-time inventory management is a means of providing immediacy while lowering inventory costs.

By holding inventories, firms acting as intermediaries reduce the risk of market transactions when demand fluctuates randomly. Retail and wholesale intermediaries diversify by purchasing and reselling a variety of products, thus pooling supplier risk (Lim, 1981). Manufacturers and wholesalers enter into financial risk-sharing arrangements with retailers and pool inventories in central warehouses to smooth out differences in demand across stores (Spulber, 1985).<sup>10</sup> Large retail chains achieve important advantages through diversification of demand risk across individual stores.

### **Matching and Searching**

Market intermediaries coordinate the actions of buyers and sellers. Marketers—including retailers, wholesalers, used car dealers and energy marketers—purchase and resell goods. Brokers—including travel agents, real estate agents, insurance agents and stock brokers—provide coordination services without buying and selling goods.<sup>11</sup> Intermediaries improve the welfare of consumers and suppliers by reducing or eliminating the uncertainty associated with making a satisfactory match. Intermediaries also add to the number of potential trading partners, thereby increasing the likelihood of encountering a trading partner and reducing search costs. Transactions with recognized centralized intermediaries can supplant decentralized search and bargaining, so that customers and suppliers avoid the costs of decentralized search.

<sup>10</sup> The member firms of the National Association of Service Merchandising provide a large proportion of their products on a risk-sharing basis.

<sup>11</sup> Real estate brokers set housing prices in Yinger (1981). In his model, brokers fix commissions and invest in search for buyers and sellers of houses. Yinger's model explains the value of shared listings such as the Multiple Listings Service.

### Matching

Intermediaries must compete with decentralized exchange, in which consumers and suppliers seek each other out and negotiate prices directly (Rubinstein and Wolinsky, 1987; Bhattacharya and Hagerty, 1987; Yavas, 1992; Yanelle, 1989; Gehrig, 1993). Sometimes both forms of exchange exist side by side. For example, an organized used car market operated by automobile dealers coexists with a decentralized market in which buyers and sellers meet informally, often through newspaper advertising. What are the advantages of transacting with an intermediary?

Consider first the matching market. Consumers have diverse levels of willingness to pay, and suppliers have different opportunity costs. If consumers and suppliers are matched randomly, in a highly decentralized fashion, the terms of the exchange become uncertain, and the risk of not completing a trade rises. After all, when consumers and suppliers bargain directly, the buyer has an incentive to understate willingness to pay and the seller to overstate opportunity costs. Asymmetric information about willingness to pay and opportunity costs causes efficiency distortions in the amount traded or even the breakdown of trade. An intermediary can eliminate this uncertainty by posting bid and ask prices, and thus offer an advantage over a decentralized matching market.

Buyers and sellers can choose between using intermediaries to trade at a known price and the risky option of the decentralized market. Gehrig (1993) models this choice and shows the profitability of intermediation. The result can be illustrated using the supply and demand framework in Figure 1. Suppose that each consumer purchases at most one unit of the good, and suppliers sell at most one unit. Then, the market demand and supply functions represent the distribution of buyer willingness-to-pay levels and opportunity costs, respectively. The intermediary chooses a profit-maximizing bid-ask spread given the value to buyers and sellers of the matching market option. At the market equilibrium, consumers with a willingness to pay above a critical level (greater than the ask price) purchase from the intermediary. Suppliers with opportunity costs below a critical level (less than the bid price) sell to the intermediary. Consumers and suppliers with values between these two critical levels enter the matching market.

Brokered exchange differs from trade between a buyer and seller in a subtle way. In direct trade, the buyer's payment must equal the seller's receipt, which constrains the possibilities for bargaining. A broker introduces many other possibilities for bargaining since the broker can effectively tax or subsidize the transaction. By "taxing" the transaction, a broker can capture some of the gains from trade by improving the chance that trade takes place (Myerson and Satterthwaite, 1983; Spulber, 1989; Mookherjee and Reichelstein, 1992). The broker designs a trading rule that elicits offers from the buyer and seller, and earns a return by creating a spread between the buyer payments and the seller receipts.

### Searching

When consumers search for a product, they face costs of travel and costs of learning about prices and comparing product features. When suppliers search for a willing buyer, they incur costs of travel and of communicating information about

their products. As noted earlier, intermediaries reduce transaction costs by centralizing exchange.

However, in a world with multiple intermediaries, consumers and suppliers continue to incur search costs from visiting multiple intermediaries. Spulber (1995) models a search market with many intermediaries. Consumers and suppliers discount future net benefits, so that the time spent searching is costly. As before, consumers have diverse willingness-to-pay levels, and suppliers have different opportunity costs. Moreover, firms that intermediate have different transaction costs. Firms set both bid and ask prices, as in Figure 1. Consumers search across firms to obtain a lower ask price and suppliers search across firms to obtain a higher bid price. As a result of heterogeneity and costly search, the market equilibrium is a distribution of bid prices and a distribution of ask prices. The equilibrium depends on the discount rate of consumers and suppliers, where a higher rate of discount lowers the number of active consumers and suppliers and raises the number of active firms. The intuition behind this result is that a higher discount rate increases the cost of time-consuming search for consumers and suppliers. This allows firms to raise ask prices and lower bid prices, since consumers and suppliers are willing to pay a premium to avoid further search, thus raising the returns to intermediation by firms. The number of intermediary firms that are active in equilibrium increases.

The discount rate determines the costs of search. As the discount rate falls to zero, the costs of search are eliminated, which shows the relationship between the size of the bid-ask spread and transaction costs. In such a model, the Walrasian equilibrium is the limiting case of an intermediated market as transaction costs diminish (Spulber, 1995). The supply and demand model can thus be viewed as an ideal case that is consistent with an underlying market with search costs and price-setting firms.

### Guaranteeing and Monitoring

Buyers and sellers usually have asymmetric information. Sellers do not know customer characteristics, and buyers are uncertain about product features. Intermediaries can help to fill this gap by collecting and supplying information to their customers and suppliers, often bundled with products and other services. Retailers describe product characteristics to their customers. Wholesalers report on market demand and customer requirements to their suppliers. Consolidating transactions through intermediaries can yield returns to scale in producing and distributing this information. Intermediaries can capture gains from trade that would be lost due to information asymmetries.

### Lemons and Guaranties

Product characteristics frequently are difficult for consumers to observe: consumers are uncertain about the efficacy of pharmaceuticals, the durability of appliances and the quality of automobiles. If consumers are less informed than suppliers about product quality, the market can fail to exist as bad suppliers drive out

good. In Akerlof's (1970) well-known "lemons" model, low-quality used cars drive out high-quality used cars, since consumers are only willing to pay an "average" price for cars of unknown quality, and only sellers of low-quality cars can trade at that price.

The market for lemons fails to realize potential gains from trade. Customers would be willing to pay for a good car if they could observe its quality. An intermediary can capture some of these foregone returns by certifying the quality of the product. Biglaiser (1993) shows that introducing a monopoly intermediary into a market with adverse selection enhances efficiency. The intermediary has a greater incentive to invest in monitoring quality than does an individual buyer, since the intermediary buys more goods. Thus, intermediaries are better able to distinguish higher-quality suppliers from those with lower quality. In addition, the intermediary's incentive to report accurately the quality of goods stems from the returns to building a good reputation. These returns can be greater for intermediaries since they carry out more transactions than individual suppliers. Buyers and sellers decide whether to transact directly with each other or to buy and sell through the intermediary. In equilibrium, all high-quality goods are sold through the intermediary, and most low-quality goods sold directly to buyers. As a result of this separation, the lemons problem is alleviated at the intermediated market equilibrium.

A retail or wholesale intermediary can offer many different products for sale, and consumers can rely on the reputation of the intermediary without having to investigate the many product suppliers. In particular, intermediaries can serve as guarantors of the product quality of their suppliers through warranties and contract terms, as in Biglaiser and Friedman (1993). A manufacturer's brand name often conveys information to customers who then do not need to know the quality of components purchased by the manufacturer. Since intermediaries handle the products of two or more suppliers, their incentives to sell a lower quality good differ from those of individual suppliers. The intermediary that sells a low-quality product suffers a loss of reputation and thus loses customers for all other products. Intermediation lowers the threshold prices that are required to sustain high-quality production.

### **Delegated Monitoring**

Monitoring the efforts of trading partners is costly, leading to moral hazard problems. It can be costly for consumers to observe whether service providers, from auto mechanics to attorneys, are working in their interests. Intermediaries can earn returns through "delegated monitoring," by supervising suppliers for their customers. In building a house, a consumer hires a contractor, who subcontracts with electricians, plumbers, masons and carpenters. The contractor takes on the transaction costs of locating skilled tradespeople, writing contracts and monitoring their performance. The contractor gains skills at these tasks, thus lowering the costs of supervision. Specialized intermediaries thus reduce the problem of moral hazard in markets.

The role of the firm as a monitor of its own personnel is well known. For example, Alchian and Demsetz (1972) emphasized the role of the firm as a



"specialist" who monitors team production efforts, designs incentives and receives the residual rewards: in their words (p. 793), "the firm serves as a highly specialized surrogate market," since the firm collects and "sells" information to employees by organizing their production activities. What I am emphasizing, in contrast, is that the firm also is a monitor of its suppliers and distributors, making sure that suppliers deliver high-quality parts on time, or requiring distributors to improve customer service.

Financial intermediation can provide economic advantages over direct lending since lenders delegate monitoring of borrowers to intermediaries who diversify risks.<sup>12</sup> In other words, monitoring costs creates an opportunity for intermediaries, where intermediaries incur debt from lenders and in return make loans to borrowers. The structure of the debt contracts results in more effective monitoring than would occur without intermediaries. As an example of thinking along these lines, Diamond (1984) offers a model in which bankruptcy penalties are incurred by the borrower and are not transferred to the other party in the transaction. The intermediary has a cost advantage in collecting information about borrowers, since lenders would duplicate their efforts if they were to monitor borrowers individually. Also, the intermediary avoids the free rider problem, which occurs if all lenders fail to monitor, since they rely on the efforts of other lenders. Lenders still incur costs of delegation since they must monitor the intermediary. However, the intermediary maintains a *net* cost advantage over direct monitoring because the returns to centralized monitoring of borrowers exceed the cost of delegation to the intermediary.

## Conclusion

Intermediaries, by setting prices, purchasing and sales decisions, managing inventories, supplying information and coordinating transactions, provide the underlying microstructure of most markets. The finance literature has extensively examined the market-making activities of stock market specialists and other financial intermediaries. Because of its significant contribution to many nonfinancial sectors of the economy, economists should incorporate the subject of intermediation within the basic framework of mainstream economics. In microeconomics, intermediation provides an explanation for how the market attains an equilibrium and how the market adjusts to changes in demand and supply. Analysis of market microstructure also has potential implications for macroeconomics. Price rigidities due to menu costs and other factors and variation in inventories play a critical role in business cycles. Understanding the pricing actions and inventory adjustment behavior of intermediaries thus may yield insights in business cycles.

<sup>12</sup> Boyd and Prescott (1986) allow intermediation by multiagent coalitions. Diamond (1984), Williamson (1986) and Krash and Villamil (1992) have single agents acting as financial intermediaries and derive optimal incentive contracts for borrowers and intermediaries. In these three models, borrowers observe the realization of returns to an investment project, but intermediaries and lenders do not. See also Chan (1983).

Since intermediation provides over a quarter of value added in the U.S. economy, it should be included along with production in the theory of the firm. The activities of retail, wholesale and financial intermediaries account for a host of significant economic developments including the rise of discount superstores (Walmart, K-Mart, Target), the emergence of "category killers" (Toys-R-Us, Home Depot, Circuit City), upheavals and consolidation in banking, and the growth of discount brokerage. In addition, new forms of intermediation are flourishing including mail order and electronic commerce on the Internet. Manufacturers are increasingly outsourcing functions, creating supplier and distributor networks and "virtual" corporations. To the extent that economists are interested in these observed market institutions, they should reorient their attention to thinking about how markets are established and then evolve.

The market microstructure framework raises fundamental public policy questions. Among these questions is whether or not the market power of intermediaries represents market failure. It is clear that the centrality of intermediation activity in the market microstructure setting stands in contrast with the exogenous market clearing assumed in traditional economics. In models of industrial organization, market power of firms is sometimes interpreted as "imperfect" competition. However, market microstructure models make the point that price setting by firms is the way in which the market mechanism normally functions. Price setting by firms is not only consistent with competition, it is the means by which markets clear. The equilibrium bid-ask spread, which separates buyer willingness to pay and supplier costs, is a consequence of transaction costs, asymmetric information and the returns to intermediation activities. Establishing the existence of market failure would still require a showing of insurmountable barriers to entry or some demonstration of improper behavior such as collusion. Therefore, price setting does not provide *prima facie* evidence of market failure.

Moreover, the departure of output and prices from the Walrasian equilibrium does not mean that there is a role for government in improving the allocation of goods and services. Establishing and operating markets is costly and difficult, and there are many reasons to believe that the government would have substantially higher transaction costs if it attempted this task. Market microstructure analysis does suggest that public policy should not be designed to favor production of goods over market allocation activities. Since intermediation contributes significantly to the economy's value added, there should not be taxes and other incentives that promote investment in manufacturing facilities over expenditures for creating and operating markets. In addition, regulators should avoid price controls and other restrictions that impair or attempt to supplant the functioning of private intermediaries. Finally, policymakers should avoid the presumption that market making and pricing activities indicate insufficient competition. Instead, these activities are ways that firms intermediate economic transactions and make markets work.

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[4541 Electronic Shopping and Mail-Order Houses](#)

**Abstract:** The advent of electronic commerce is changing marketing practice. In particular the transformation of traditional *intermediaries* such as the retailer is occurring as a result of new computer-mediated relationships. This paper uses the setting of an interactive home-shopping supermarket to examine the changing role of the retailer in electronic commerce environments (ECEs). We build on our previous conceptual enquiry which proposed a conceptual model which posits that retailers in an ECE apply a trust-based approach to consumer marketing relationships. In this paper we provide additional literature and empirical evidence to support our proposition that the relationship between the retailer and their customers can be defined by the disconfirmation of two cognitive images of the on-line shopping experience, these being the expected virtual (service brand-created, cognitive image of experience) and actual real (service-processcreated, cognitive image of experience) images. This paper develops existing conceptualizations through new, confirmatory, interorganizational case data and consumer-oriented, qualitative, empirical evidence from focus groups that supports our proposition. [ABSTRACT FROM AUTHOR]

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## Relationship marketing in electronic commerce environments

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The advent of electronic commerce is changing marketing practice. In particular the transformation of traditional intermediaries such as the retailer is occurring as a result of new computer-mediated relationships. This paper uses the setting of an interactive home-shopping supermarket to examine the changing role of the retailer in electronic commerce environments (ECEs). We build on our previous conceptual enquiry which proposed a conceptual model which posits that retailers in an ECE apply a trust-based approach to consumer marketing relationships. In this paper we provide additional literature and empirical evidence to support our proposition that the relationship between the retailer and their customers can be defined by the disconfirmation of two cognitive images of the on-line shopping experience, these being the expected virtual (service brand-created, cognitive image of experience) and actual real (service-process-created, cognitive image of experience) images. This paper develops existing conceptualizations through new, confirmatory, interorganizational case data and consumer-oriented, qualitative, empirical evidence from focus groups that supports our proposition.

### Introduction

The use of electronic commerce environments (ECEs) as a means of enacting transactions and relationships with customers is increasing exponentially. Recent statistical data supports this claim and it is predicted that, by the turn of the century, total revenue streams through ECEs, such as the Internet, will exceed \$US200 billion. To date, most forecasts of market potential have attributed this growth to developing ITs which have enabled more businesses to adopt electronic commerce as a new channel for transactions as well as a dramatic growth in the number of customers enlisted in on-line commerce services (Crede, 1995; Hoffman and Novak, 1996).

However, as marketers attempt to capture the projected market growth, their focus has shifted to understanding how such IT-enabled relationships are changing the organization and its external interactions (Cash and Konsynski, 1985; Malone *et al.*, 1987; Markus and Robey, 1988; Konsynski and McFarlan, 1991; Scott-Morton, 1991). Part of this enquiry focuses on the implications of this change on the selection of appropriate strategies for electronic commerce relationships (Thirkell, 1997; Davis *et al.*, 1999) and on the emerging role of digital intermediaries in the consumer transaction process (Fox, 1996; Hoffman

and Novak, 1996; Sarkar *et al.*, 1996; Alba *et al.*, 1997; Burke, 1997).

Investigation into the changing nature of channels in ECEs has never been more important as disintermediation drives closer links between the manufacturer and the consumer, fundamentally challenging the retailer to transform the value they create as an intermediary (Alba *et al.*, 1997; Sahay *et al.*, 1998). Therefore, the following is a key question echoed by marketing and IT researchers alike:

What is the appropriate on-line marketing strategy to help define systems architectures that will build relationships and strengthen the motivation of consumers to electronic commerce service offerings?

In our initial attempts to answer this question we discovered little theoretical or applied evidence, even though consumer-oriented, on-line shopping services such as PeaPod and Amazon.com have been operating for many years. We noted that some organizations have sought to overcome these gaps through the adoption of traditional approaches to services relationships that predominantly rely on physical interaction. Many have not succeeded. While this approach seemed relatively pragmatic, they failed to understand that the new computer medium is characterized by fundamentally different ways of communicating which are

dictated by the mediated experience of the ECE and by an inability for buyer and seller to interact directly and physically.

Consequently, some researchers have begun to explore the experiential image in the consumer's mind in the ECE (Blattberg and Deighton, 1991; Hoffman and Novak, 1996), while others have investigated the role of symbolic cognitive constructs such as the brand in related service environments (Berthon *et al.*, 1996; Padgett and Allen, 1997; Philport and Arbittier, 1997; Dall'Omo Riley and De Chernatony, 1997). To date, however, the literature paints a fragmented and incomplete view, particularly of the role of service brands in electronic commerce market-ing relationships. Further research was seen to be required.

In response, an initial examination was carried out by the authors into the relationship marketing strategy between retailer and consumer and into the role of brands (Davis *et al.*, 1999). We posited that the consumer's experience of shopping on-line was defined by the image of the experience in the consumer's mind created through their interaction with the service brand and associated IT processes. However, one limitation of the research was that it represented a consumer-oriented view of the communication process but was supported only through evidence from executive interviews from organizations involved with the service. Therefore, in this paper, we develop these initial conceptual developments further through new confirmatory qualitative data from interorganizational case studies and consumer focus groups, which support our propositions.

The paper proceeds as follows. In the first section the literature is revisited to build on the conceptual foundations of the research and propositions. In the next section the methodology is described. We then provide evidence to support our conceptual argument by analysing transcriptions from in-depth interviews with executives and consumer focus groups. Finally, we draw a series of implications arising from this analysis.

### Conceptual foundations

In our previous research we posited that interactions in the relationship between retailer and consumer in electronic commerce shopping environments is real-virtual (Davis *et al.*, 1999). This relationship is defined by the disconfirmation of the expected virtual (service brand-related) and the actual real (service process-related) phenomenological experiences of shopping on-line (Castells, 1996; Hoffman and Novak, 1996). This is a trust-based perspective (Rao and Ruekert, 1994; Moore and Andradi, 1996; Urban, 1998) which

argues for a two-way disconfirmatory relationship between retailer and consumer (Mattsson, 1992; Teas, 1993; Spreng *et al.*, 1996). We postulated the following six propositions (Davis *et al.*, 1999).

- P<sub>1</sub>: The relationship between retailer and consumer in electronic commerce shopping environments is defined by the phenomenological disconfirmation of the expected virtual and the actual real experiences of shopping on-line.
- P<sub>2</sub>: The phenomenological process of disconfirmation of the real-virtual shopping experience allows the consumer to assess their overall level of satisfaction, when the real experience of shopping on-line exceeds the virtual shopping experience, leading to the development of trust.
- P<sub>3</sub>: The expected virtual experience of shopping on-line, described as expected flow, is defined by the image in the consumer's mind of the experience, created through their interaction with the interorganizational service brand. This image represents a promise.
- P<sub>4</sub>: The interorganizational service brand image is defined cognitively as the knowledge-based interlock between the retailer's organizational service brand and the alliance service brands from the retailer's interorganizational service network.
- P<sub>5</sub>: The real experience of shopping on-line, described as actual flow, is defined by the image in the consumer's mind of the experience created through the consumer's interaction with the service process interface (computer and distribution services processes). This service process interface comprises the retailer's organizational service and the alliance service processes and is termed the retail marketing ECE.
- P<sub>6</sub>: The retail marketing ECE is defined by the functional, process-based interlock between the retailer's organizational service and the alliance service processes of the interorganizational network.

In other words, when the consumer interacts with the interorganizational, service brand construct a cognitive image is created of what they should expect in terms of the on-line shopping experience. This is called the virtual component of the relationship. Similarly, when the consumer interacts with the seamless, interorganizational, service processes associated with the service brand (these processes may include, for example, the software computer program and the physical delivery process), a second cognitive image of the on-line shopping experience is created. This is



called the real component of the relationship as it reflects the consumer's cognitive experience of the actual delivered service.

In the following discussion we further examine the critical antecedents of our real-virtual conceptual model informed by the concept of relationship marketing (Grönroos, 1994; Gummesson, 1996; Brodie, 1997; Coviello *et al.*, 1998). Our model views the service interaction as (1) a real-virtual interaction, (2) a phenomenological experience and (3) a trust-based approach. We then proceed to explain briefly the nature of the conceptual model emphasizing (4) virtual interactions, (5) real interactions and, finally (6) explain the consumer's assessment of their overall satisfaction of the interaction, real-virtual satisfaction.

### Interactions

First, we argue that marketing interactions between the retailer and consumer are characterized by a state of real virtuality. Castells (1996, pp. 372–3), who took a sociological perspective, explained that this state is where

there is no separation between reality and symbolic representation ... it is a [communication] system in which reality itself (that is, people's material/symbolic existence) is entirely captured, fully immersed in a [cognitive] virtual image setting in the world of make believe, in which appearances are not just on the screen through which the experience is communicated, but they become the experience (pp. 372–3).

The concept of real virtuality is important in marketing interactions on-line because in ECEs the relationship between the retailer and consumer is based upon channels of information via computer networks and, as such, little physical interaction occurs. The interaction, therefore, is seen as being entirely perceived as a marketing communication process in the consciousness (Grönroos, 1996; Coviello *et al.*, 1998).

In order to explain how this occurs in ECEs consider the challenges of shopping for real-virtual tomatoes. When people buy their tomatoes on-line they have an information-rich, subjective experience. The tomato, as such, is digitally captured and immersed in a virtual image setting in which the appearance of the tomato is not just on the computer screen through which the experience is communicated, but the consumer becomes part of the experiential tomato (Steuer, 1992; Castells, 1996; Hoffman and Novak, 1996; Shih, 1998).

The uplifting of this fruit into the virtual space of cognitive experience, from the market-place to market-space, is essential because the consumer can no longer

press and prod the tomato as a subjective assessment of quality. Therefore, they rely on the information-rich, IT service-generated, cognitive experience of the tomato. This experience becomes an enhanced service interaction because, in the computer-shopping medium, reunification of traditionally separate and various modes of communication occurs (Castells, 1996; Venkatesh, 1998) (Figure 1). We note that, in electronic shopping for products, not all of a consumer's external stimuli is computer-mediated. Although the consumer is buying products on-line, physical distribution must occur and information inputs will also necessarily result from the physical interaction (Steuer, 1992; Rayport and Sviokla, 1994, 1995; Benjamin and Wigand, 1995; Weiber and Kollmann, 1998).

The real-virtual approach to interaction has some very practical implications which relate to definitions of artificial reality environments (Buxton, 1994). These definitions posit that the user's interaction with artificial environments can be enhanced either through (1) the use of technologies to re-create the physical scene or (2) emphasis upon the cognitive process of the users experience. The latter defines the approach to interactions we have adopted and treats consumers as complex multimedia organisms, the nature of which artificial systems attempt to emulate (Geirland, 1996). This approach recognizes the cognitive power of the human brain (rather than the processing power of the machine) as the most significant discovery in human-computer interaction. It acknowledges that on-line communication is processed by users employing all the sensory information inputs available to them and employing all available devices for accessing information (Travis *et al.*, 1994; Geirland, 1996).

This approach was supported by Csikszentmihalyi (1990) who suggested that the extent to which users would conclude that they are happy with the outcome

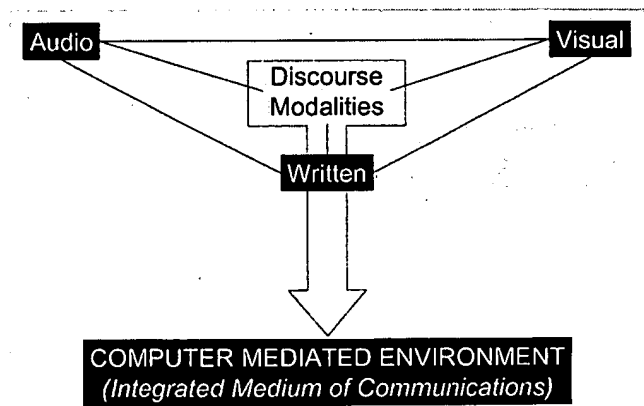


Figure 1 Integrated medium of computer-mediated communications

of, for example, buying the tomatoes on-line is dependent upon the chain of thoughts, feelings, sensations or information that effect a discernible change in awareness. These become apparent during the service interaction. We therefore suggest that the consumer's satisfaction with their tomatoes will be related to their overall experience of the interaction rather than by the retailer trying to match the reality of the user's physical world.

Secondly, we argue that, when viewing the interaction as real virtuality and a communications process of the consciousness, the interaction is a phenomenological system (Johnson, 1998). In other words, we are concerned with the development of a theory where the focus is on experience, the mental correlate of actual behaviour and motivation (Lacity and Janson, 1994; Laudon, 1995; Chikudate, 1997). This approach emphasizes the experience of using the ECE itself (Hoffman and Novak, 1996).

Thirdly, in an ECE, a trust-based approach to the interaction must be taken (Urban, 1998). Trust is considered to be the essence of a relationship (Grönroos, 1994; Gummesson, 1994; Morgan and Hunt, 1994; Webster, 1994; Buttle, 1996; Nelson and Coopride, 1996; Murphy and Gundlach, 1997) and, in ECEs, trust is an integral component of the interaction. For example, Moore and Andradi (1996) noted, probably one of the greatest challenges to marketing on the Internet is consumer concern with risk as they have little or no opportunity to control quality physically. They advocated that in ECEs consumers turn to other criteria, such as symbols, to provide experience clues and, in this way, these symbolic entities act as a form of promise to be delivered upon, enabling the development of trust between the buyer and seller.

In the following discussion, we examine virtual and real interactions, examining how marketing variables, such as the service brand, may be used to support these interactions cognitively. We conclude with an understanding of how these two constructs enable consumers to assess their own level of satisfaction with shopping on-line.

### Virtual interactions

We propose that the virtual interaction is the expected virtual experience of shopping on-line. This is commonly articulated by consumers as a structural phenomenology, described as their expectations of the flow experience.

From our previous example of shopping for tomatoes on-line as a phenomenological experience we argue that to support the virtual interaction cognitively, consumers become increasingly reliant on symbolic

entities, such as brands, as informational inputs. This argument is derived from Csikszentmihalyi (1990) and others (Trevino and Webster, 1992; Webster *et al.*, 1993; Hoffman and Novak, 1996) who contended that a consumer's optimal on-line experience is defined by inputs of external information that are consistent with the user's on-line shopping goals and objectives. These act to create an image in the consumer's mind of the expected experience. Brands, therefore, as a form of promise, play a key role in the experiential 'priming' of the user.

The role of brands as informational conduits is a core concept in marketing (Aaker, 1996, 1991; Duncan and Moriarty, 1998) and, from a services perspective, they are seen to act as a relationship fulcrum (Dall'Omo Riley and De Chernatony, 1997). 'In service industries, firms having strong brand names and symbols are better positioned to mitigate customers' perceptions over... quality' (Bharadwaj *et al.*, 1993, p. 91). In essence, the brand is a symbolic resource (Elliott and Wattanasuwan, 1998) which provides a mechanism to engage both buyer and seller in a long-term relationship. It also promotes the development of trust (Rao and Ruckert, 1994; Aaker, 1996; Gurviez, 1997; Keller, 1998).

Moore and Andradi (1996) noted that, when a consumer shops in a traditional store, they can judge a product by its physical characteristics and by the retail environment. In on-line shopping these cues are absent and so most products become experience products. As a result, the consumer turns to other value criteria such as brands. Deregatu *et al.* (1998) supported this view suggesting that, due to the problem of such missing information, on-line brands are expected to have a higher impact on consumers' decision processes.

This argument was further extended by Rao and Ruckert (1994) and Moore and Andradi (1996), who noted that, particularly in multiservice ECEs, information asymmetry and missing information occurs. Therefore, firms may communicate to consumers additional experiential perceptions which are not normally associated with their service brands through brand alliances. In such brand alliances two or more brands are integrated and perceived by the consumer as linked or jointly branded. The logic of brand alliances can be related to the literature on interorganizational networks and there is growing evidence that firms are commonly oriented towards interorganizational relationships in ECEs. The main strategic benefit is interorganizational configuration for the coordination of mutual benefit through resource exchange (Naisbett, 1984; Miles and Snow, 1986; Rockart and Short, 1991; Scott Morton, 1991; Willcocks and Fitzgerald, 1994).

On-line brand resources can also be shared across organizations if information asymmetry and missing information is a problem with individual service brands. If brands are to communicate to consumers what they are to expect experientially while they are on-line, it becomes difficult for one brand in isolation, such as the retail brand, to make adequate promises regarding service processes which are not normally associated with their brand (e.g. banking, Internet access and distribution). Historically, these associations have not been created because they are not central to the retailer's core business and market-place advantage. To overcome this problem in market-space, retailers can create brand alliances with their service partners to make assurances to the consumer regarding the delivery of the overall service process interaction.

Brands, as a form of promise, have never been more important than with Internet-based shopping (Moore and Andradi, 1996). As we are reminded, the basis of any form of human interaction or exchange is the promise concept (Murphy and Gundlach, 1997). It is only through making and keeping promises in marketing interactions that trust can be built between buyer and seller (Grönroos, 1994; Gummesson, 1994; Buttle, 1996).

A key aspect of the virtual interaction is the way in which the service brand-related promise is used to build a mental picture and image of the expected experience in the customer's mind. This image is defined as the meaning consumers associate with the product or service (Dobni and Zinkhan, 1990). Such meanings are derived by consumers by receipt of brand-related information which forms perceptions of, in this case, the expected experience of shopping on-line. This may include any brand-related activity and centres on the perception of the product's or service's ability to satisfy consumers' needs (Dall'Omo Riley and De Chernatony, 1997). Padgett and Allen (1997) argued that the role of brands and the image they create in consumers' minds in services environments must extend to

...include the attributes and functional consequences and the symbolic meanings consumers associate with a specific service. Such meanings are attached to a service through a combination of personal experience, communication with other people, and advertising. It is the composite of those meanings associated with a service brand that influences behavior toward the brand... In sum, service brand image is the consumer's mental picture of the brand created in response to brand-related stimuli. (p. 51)

In order to understand the service brand-created image of the consumers' expected on-line shopping

experience we draw on Keller's (1993) associative network brand memory model where perceptions of a brand are the associations held in a consumer's memory. In other words, when brand-related promises about the ECE experience are made to consumers by advertising and other forms of communication, informational nodes are created which are linked to the brand's node in memory. These informational nodes contain the experiential meaning of the brand for consumers.

In summary, the consumer's expectations of the on-line experience in ECEs is defined by the image in the consumer's mind of the experience and created through the consumer's interaction with the service brand alliance, the interorganizational service brand. The retailer is unable to create this image in their customer's mind as a singular symbolic entity and, as such, their relationship marketing strategy will be to develop a service brand alliance through the creation of an interorganizational retail services brand. The interorganizational service brand is defined by a knowledge-based interlock between the retailer's organizational service brand and the alliance service brands from the retailer's interorganizational network.

The retailer and consumer use this image as a form of contractual promise regarding the satisfaction levels of the on-line shopping experience. The image in the customer's mind is created and a promise made when the customer interacts with the interorganizational service brand.

### Real interaction

Finally, we proceed to examine the second component of the interaction, the real interaction. This is an extension of the virtual interaction but here it relates to the mental image created in the consumer's mind when they shop on-line (Keller, 1993). In essence, this interaction and the phenomenological experience of it is created through the consumer's interaction with the service process interface. The service processes are associated with the interorganizational service brand and may include IT processes, e.g. the software interfaces and/or processes related to the physical distribution of the product to the consumer.

The process platform, even though it is drawn from multiple organizations, is functionally interlocked between the retailer's own organizational service and the alliance service processes. This ensures that the service process offering is seamless and consistent with the experiential promise to consumers communicated by the interorganizational service brand. For the consumer this second, real, experiential image (also described as actual flow) represents the actual on-line shopping experience.

### Real-virtual satisfaction

The goal of service interactions in both traditional environments and ECEs is the perceived consumer satisfaction with the interaction and this commonly hinges on positive customer perceptions of the interaction (Solomon *et al.*, 1985; Fisk *et al.*, 1993).

As we have argued, the ECE consumer has two experiential images in their mind: (1) that relating to interorganizational, service brand interactions and (2) that relating to interorganizational, service process interactions. Therefore, the consumer can assess their overall satisfaction with the experience of the on-line shopping service through the phenomenological process of disconfirmation (Parasuraman *et al.*, 1985; Mattsson, 1992; Teas, 1993; Spreng *et al.*, 1996; Costabile, 1998). In other words, high levels of satisfaction result when the actual real service experience is greater than the expected virtual experience, resulting in the development of trust (Costabile, 1998). In the long term, this leads to consumer motivation towards the interorganizational service brand and can be described as leading to loyalty (customer retention) to the on-line shopping service.

### Methodology

The setting of the interactive home shopping study articulates the changing role of retailing relationships (Figure 2). The central tenant is a supermarket and the project itself is a multipartner commercial development aimed at expansion into the electronic shopping market sector. It includes the following organizational entities: a systems integrator, a retailer, a courier, an Internet service provider and a bank. The service offers consumers home shopping via a personal computer. The service went public early in 1997 and national thereafter.

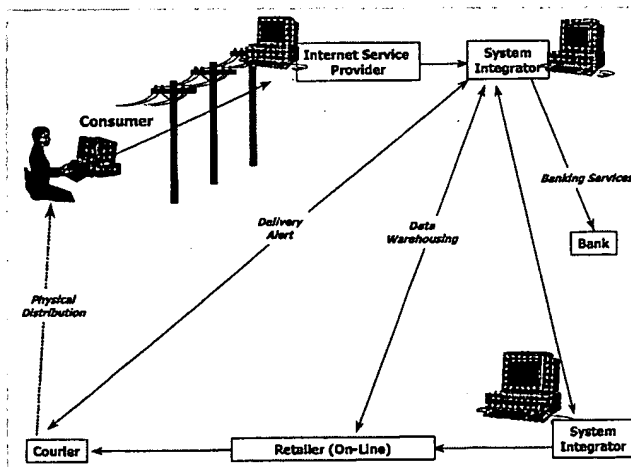


Figure 2 Research setting

The study employed two key stages of conceptual development. The first stage used the case study approach (Eisenhardt, 1989; Orlikowski, 1993; Miles and Huberman, 1994; Yin, 1994). In-depth interviews with executives from the five service organizations were used to develop and refine the research propositions and create a conceptual model of the marketing relationships in an ECE. The case study was a multiple, five-organizational case design. Senior executives and key team members in each organization were targeted and requested to participate. The number of case interviews totalled 27. Secondary documentation was triangulated with the interviews (Jick, 1979). The interview programme was set over a 3 month period involving all 27 interviewees and employed a semi-structured interview technique. The analysis employed traditional, researcher-based techniques (Miles and Huberman, 1994; Yin, 1994), aided by the use of the computer-based tool QSR NUD.IST.

The second stage of the method was a series of structured focus group replications intended to explore the research question further in conjunction with the preliminary propositions (Calder, 1977; Durgee, 1987; Morgan, 1988; McDonald, 1993; Clapper and Massey 1996). In an attempt to part simulate an ECE, the consumer focus groups used a decision support system. The use of the computer to elicit responses from the group provided deeper descriptions from the respondents of the phenomena in question.

The focus group participants were drawn randomly from a target sample of the top 200 customers by total value spent. Twenty-six consumers formally agreed to participate in the focus groups, which were spread over five sessions. Analysis of the focus group evaluation data indicated that the 26 participants represented a homogeneous sample of the total shopper population. Of the 26 participants nine were men and only one person was not the main supermarket shopper for their household. Five participants were not married, six had less than two income earners per household and six had two or less people in total per household.

Most participants were middle aged (mean = 42.6 years) with a wide range of professional occupations. They showed high levels of time spent in secondary schooling (mean = 4.7 years) and tertiary education (mean = 4.5 years). The mean combined income per household was over \$NZ100 000 (mean = \$NZ106 461). The data also showed that the participants had spent nearly 1 year using the shopping system (mean = 11.9 months) at a rate of over three times per month (mean = 3.3 shopping events per month). The process of analysis of the focus group transcripts applied the same process of analysis employed in the first stage of data collection.

Finally, it is noted that the identity of the organizations, executive cases and consumer focus group participants involved cannot be revealed for legally binding confidentiality and ethical reasons. However, every attempt is made to identify the context of the presented text units without contravening these constraints.

## Evidence

The key driver of the change in services orientation in the on-line shopping ECE is disintermediation, which is driving closer links between the manufacturer and consumer. For the partners in this interactive network, disintermediation is presenting some fundamental challenges to transforming the way in which they traditionally add value as a service intermediary, as this participant indicated:

... it is very revolutionary what the Internet is doing to marketing and retail ... I think that it is interesting to see that the people and businesses that are at most risk of disintermediation, or being cut out of the chain between the supplier and customer/user, are the most active [in] carving themselves a niche ... the Internet is destroying the retail channel brand ... it is being reshaped ... So what does that leave the ... retailers or distributors ... on the Internet? What it leaves them is using the Internet as a very clever channel to provide a lot of information and backup to their existing retail channels (executive interview data).

In our exploration of the responses of the network partners to such threats of disintermediation we found that they were redefining their traditional determinants of service value through the creation of new inter-organizational relationships. We noted that the partner organizations had begun to form the relationship based upon each firm's organizational service brands (with the aim of creating a virtual image of the service experience) and functional processes (with the aim of creating a real image of the service experience) ( $P_1$ ,  $P_3$  and  $P_4$ ). In this network the system integrator integrated the various actors in the relationship, particularly between the various services process and brand images, creating a common service offering and symbol of meaning to the consumer, which formed the basis of interaction:

I actually see that the [system integrator] is all those components. It is almost like a parent ... it is a bit like a consortium [and] is very much the integrator in terms of brands [service brands] and business relationships [service processes] (executive interview data).

This common service brand and process was perceived to be important by consumers:

Obviously you need to have all three types of service brand – supermarket, courier, bank – in order to make the system work ... each playing a critical role co-ordinated by [a] company [the system integrator] (consumer focus group data).

The development of these brand-related associations was motivated by the partners (the Internet service provider, retailer and courier) seeking new marketing opportunities through the reorientation of their brands in the services environment of the ECE:

[The retailer] have been the innovators on many occasions. [The Internet service provider] with the [Internet service provider product] brand wanting to be seen as the innovators again – trying to shake of the old [Internet service provider] brand through the zappy [Internet service provider brand] Internet service. [The bank] again are looking to be at the front edge. They have been beaten so many times by [competitors] in technology issues. They have to be part of the new paradigm. [the courier] ... they have an aspiration (executive interview data).

It is important to note that each organization, with the exception of the system integrator, operates in mature markets which are in a slow decline and/or are targeted towards business customers, with the exception of the retailer. The system integrator represents a pathway for this reinvention. The system integrator clearly sees this function as part of the integration process:

We represent opportunities for business development that they are prepared to put a certain amount of research, money, time, etc., into. In order to say 'can I develop that and get a return from it?' We represent an opportunity to move into new or expanded business in new ways (executive interview data).

This view was shared by consumers: '[They are] all companies working in mature markets looking for new opportunities' (consumer focus group data).

However, it was clear that, although there were positive opportunities for brand-related associations, there was a potential downside that needed to be controlled. One senior executive cited the historical failure of Tesco and other supermarket chains as a warning: 'TESCO, who has opened up its own service and other supermarket chains have tried but failed' (executive interview data).

This view was echoed by the retailer who cited a failed brand alliancing promotion with a multinational IT company:

[The retailer] has had a history of getting involved with projects like this and things going wrong. For example, the [IT company/retailer] 'PC [personal computer] for schools' program caused a lot of problems for our brand. It pays to keep that in mind, that we have been let down before (executive interview data).

To balance their risks and the historically perceived effects of other ECE projects on consumer confidence and comfort, trust became an essential component of the development of a common symbol of meaning to the consumer, particularly in terms of satisfaction ( $P_2$ ). The system integrator approached the development of consumer trust and security from two angles. The first related to exploiting strong, indigenous brand image associations, considered important to the national target market: 'There is a strong branding here . . . It is more homogeneously New Zealand' (executive interview data).

Consumers considered such brand strength essential:

'Each of the [service] brands . . . are leading brands . . . [the fact that they are] well-known, reliable companies gives you confidence that [the] system will work well and [that you] will not be let down (consumer focus group data).

Secondly, the system integrator sought to leverage existing consumer perceptions of the partners' brand images and their brand associations in terms of comfort and security. To support this view one participant argued that

The key factors of interlock are the brand equities that each of the parties brings. The group as a whole is enormously powerful. If you put all those famous brands together in the mind of a consumer or business partner, it brings them comfort in what is a very leading edge, futurist type of endeavour. It has been very important for this company to link in with famous brands and to leverage that brand equity . . . [in] heading for a mainstream mass market we need to go with the well known, well trusted brands (executive interview data).

I always talk about it from a consumer's point of view, in that they are powerful brands. I believe the power exists in the position that brand occupies in the mind of the consumer . . . that there is a certain familiarity. And it is that which will bring the comfort and confidence for people using this system or for them to want to be associated with that brand (executive interview data).

The retailer also saw brand trust associations as important ( $P_2$  and  $P_3$ ):

There is a whole degree of risk in there and there has got to be brand fit. Just like there has got to be brand fit with the consumer, there has got to be brand fit with any other company that you have an alliance like this with . . . the [retailer] as a brand is fairly dependable. It has been around a long time but with some people, depending on where they shop, we have a more contemporary image and certainly amongst the supermarkets in this industry we are seen as being innovative. But if we align ourselves with somebody that does not fit that sort of profile then I think it is all wrong, you are pulling your foundation stones away (executive interview data).

The bank not only saw trust and service branding as important in ECEs but also expressed concern that the other partners would deliver what was promised to the consumer:

The other thing that we looked at when we started . . . was [that the system integrator] was only following brand name retailers which equate to generally trust and confidence. If . . . it is brand name retailers you have the consumer's confidence . . . A big part of the trust is the pursuit of brand name stores. People feel they have got recourse because they know where the bricks and mortar is to go in and make a complaint and try and seek remedy. They recognize those big brand name retailers have got a lot more to protect than making a small sale and so image is of value to them. But if it is an organization I know nothing of and who is really just a couple of people who have set up a virtual warehouse [then] what happens when it goes wrong? Where do I go, who is looking out for my interest? (executive interview data).

The service brand as a fulcrum of relationship trust was articulated strongly by consumers:

Trust allows me to let people provide the service that I am requesting of them. I trust because I know the service brands. I trust because I found out about [the service] from someone I know, like and trust! I trust because of previous experience [in the physically mediated environment]. I trust because I have knowledge of the service. I trust because it has worked and worked to a level that I am happy with. If there was no trust I could not allow the service to continue (consumer focus group data).

This service delivery proved to be an important linkage between the physically mediated environment and the ECE. In the ECE delivery process consumers move through the above transition and leading brand name retailers can still provide the opportunity of experiencing physical interaction.

The desired integration of five differentiated brands also created the need for brand interlock ( $P_4$ ). The dominant logic behind interlock is the creation of the common integrated symbol of identity to the consumer. To achieve brand interlock there was the need to create a fit between organizations which were not directly interrelated, in order to create a common symbol of identity with each partner company:

I believe that it is lots of things . . . you have got marketing and software development, customer services all forming a company. I believe that that is how we should be looking at the [retailer], the [courier] [the internet service provider (ISP)], the [bank]; all those components should come together and form a brand. There has got to be a real tight coming together of all those individual brands (executive interview data).

The ultimate focus of this effort was the creation of an overall brand image vision, allowing for a fit between the common symbol of identity, the brand image-related perceptions of the ECE and the actual services offering ( $P_6$ ):

everyone buying into the vision . . . we are trying to keep the vision fresh in front of them [the partners] . . . the parties [have] bought into the vision of the electronic future as it relates to retailing . . . I believe that the whole basis of this really is an earnest desire to reach this particular point, that we have a common goal and a common vision (executive interview data).

Given this desire to create brand interlock, the study questioned how consumer-based brand interlock might be achieved. We argue that, to achieve interlock, attention should be focused on two factors. The first recognizes that the brand is based upon the context of service processes to the consumer, that is via a physically mediated environment (distribution of product) and an ECE (electronic shopping system). For example, consumers perceived this process interlock in operation: 'Each adding value to the process with their own expertise' (consumer focus group data).

Secondly, it was understood that interlock needed to be based on the creation of customer satisfaction. For the consumer the perception of brand interlock was achieved through visibly enhancing common perceptual threads in the consumer's mind (associations) between the components of each brand's image, which were, in turn, consistent with the partners' global brand image vision.

The process of achieving brand interlock was also linked to a relearning of the brand's presence for the consumer. We noted that perceptual confusion occurred when the partners investigated how this new

brand was symbolized in the consumer's mind. For example, the most common source of confusion arose when two brands had different market orientations, as with the retailer (retail consumers), the courier and the Internet service provider (business customers) organizational brand entities. These two latter brands communicated different meanings about what satisfaction meant to the customer.

To avert this confusion, brand interlock was seen as a process of control and the dominant controller of the brand became the retailer, as they are the anchor tenants holding the dominant position in the inter-organizational relationship. This control was due to their target consumer intimacy and their overall input into the global visioning of the enterprise. This dominance by the retailer enabled not only control of the process of interlock, but parallel leverage of the back-end interorganizational services integration in the retail service environment to ensure experiential gaps were minimized ( $P_1$  and  $P_5$ ):

[The retailer] exercise more at times on detail on how they are going to do business and [the system integrator] has to live with that. Their relationship with the customer is a determining factor in [the retailer's] power, it is something to protect (executive interview data).

The role of the retailer as the dominant controller was also important for consumers:

[The retailer] brand dominates . . . important when trusting someone else to select your food. . . . More significant in the summer, when I did worry about how long delivery took in the heat (consumer focus group data).

Brand interlock was seen by the retailer as being a key issue in the development of business opportunity but was also viewed in terms of potential risk of brand equity erosion through being perceptually interlocked with the courier. From the retailer's perspective the courier owned the physically mediated customer interface:

'We are very sensitive to the fact that . . . the [courier] is representing the [retailer] brand . . . representing our interests in terms of what the customer experiences (executive interview data).

The process of brand interlock was also seen as a major issue for the courier: 'We definitely saw that . . . [the retailer] was concerned about . . . [the courier] delivering the goods and representing their brand to the customer' (executive interview data).

The resulting effect of this was potential perceptual confusion for the consumer as the two brands appeared discretely. The retailer acknowledged the



synchronization role of the system integrator in reducing the threat of confusion created through the interlock process, but, due to initial relational ambiguity, the process of achieving brand interlock and the potential risk to brands of equity erosion was prevalent. Consequently, control mechanisms were established to ensure that the process of interlock was consistent with the shared global vision. From the consumer's perspective the courier is a component of a seamless process of physical service associated with the medium of the ECE: 'I believe [the retailer, courier and bank] work together well to make shopping a seamless experience' (consumer focus group data).

In conclusion, therefore, support for our propositions has been established through the literature and case findings. We have described a case in which five service organizations adopted a real-virtual approach to relationship marketing in ECEs. Led by the retailer organization the marketing relationship is viewed from the perspective of the consumer's phenomenological and disconfirmatory experience of shopping on-line. Through application of this managerial frame the consumer can assess the overall level of satisfaction. This provides the mechanism upon which trust in the relationship can evolve through experience.

### Implications

In this paper we have built on our previous conceptual model concerning value-creating strategies for service companies facing the threat of disintermediation. Such strategies commonly necessitate the forming of alliances with other service providers for the creation and delivery of electronic commerce. To combat the perceived risks of ECEs, managers should ensure that they ally with brands that offer high consumer brand value, are consonant with their own service brand values and reinforce consistency and trust with consumers. Managers should also understand that the relationship between the retailer and the consumer in ECEs is defined by the disconfirmation of two cognitive images of the on-line shopping experience. These images are identified as the expected virtual (service brand-related) and the actual real (service process-related) images.

We have also presented new confirmatory evidence from the retail organization, their network partners and their consumers which supports our contention that a trust-based approach be applied by retailers in such environments. This involves the keeping of a promise to the consumer. This promise is defined by the virtual image of the interorganizational service brand held in the consumer's mind and created by their interaction with that brand. Keeping promises

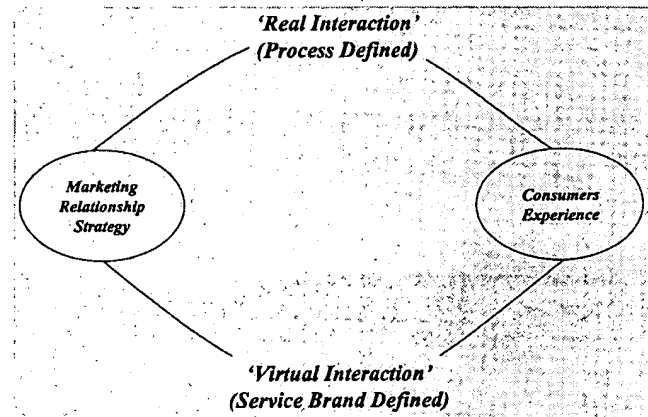


Figure 3 The concept of real-virtual interaction

necessitates the creation and management of brand interlock at both the virtual, symbolic level (the customer perceives consistent links between all partner brands and the interorganizational service brand) and at the functional level (the customer perceives a seamless service delivery process by all partners). Such management allows the customer to assess their level of satisfaction and leads to the creation of high levels of trust in an ECE.

Future research will explore consumer perceptions of the service brand further and investigate differences in traditional and ECE service brand environments.

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